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L9: Entry 86 of 90 File: USPT Sep 5, 1978

US-PAT-NO: 4112069
DOCUMENT-IDENTIFIER: US 4112069 A

TITLE: Treatment of ruminants

DATE-ISSUED: September 5, 1978

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Huber; Thomas L.	Watkinsville	GA		

US-CL-CURRENT: 424/93.4; 119/174, 426/2

CLAIMS:

I claim:

1. A method of treating a ruminant animal which had previously subsisted on a substantially hay diet or by range foraging to avoid or overcome lactic acidosis when said ruminant animal is fed for fattening a high energy ration or diet which comprises administering to said ruminant animal a culture of the microorganism Peptococcus asaccharolyticus to establish a growth of said microorganism in the rumen of said ruminant animal to avoid or overcome lactic acidosis.

2. A method in accordance with claim 1 wherein the microorganism is administered by direct injection into the rumen.

3. A method in accordance with claim 1 wherein the microorganism is administered by means of a tube into the rumen.

4. A method in accordance with claim 1 wherein the microorganism is administered in the feed to said ruminant animal.

5. A method in accordance with claim 1 wherein said ruminant animal is cattle.

6. A method in accordance with claim 1 wherein said ruminant animal is sheep.

7. A method in accordance with claim 1 wherein said ruminant animal is goat.

8. A method in accordance with claim 1 wherein said ruminant animal is camel.

9. A method in accordance with claim 1 wherein said ruminant animal is llama.

10. A method in accordance with claim 1 wherein said ruminant animal is buffalo.

11. A method in accordance with claim 1 wherein said ruminant animal is bison.

12. A method in accordance with claim 1 wherein said ruminant animal is beefalo.

13. A method in accordance with claim 1 wherein said ruminant animal is deer.

14. A method in accordance with claim 1 wherein said ruminant animal is antelope.

15. A method in accordance with claim 1 wherein said ruminant animal is ox.

16. A method of treating a ruminant animal which had previously subsisted on a substantially hay diet or by range foraging to avoid or overcome lactic acidosis when said ruminant animal is fed for fattening a high energy ration or diet which comprises adjusting the pH of the rumen of said ruminant animal to about 7.0 and introducing into the stomach of said animal via a tube a culture of the microorganism Peptococcus asaccharolyticus to establish a growth of said microorganism in the rumen of said ruminent animal to avoid or overcome lactic acidosis.

17. A method in accordance with claim 1 wherein said ruminant animal is a calf.

18. A method in accordance with claim 16 wherein said ruminant animal is cattle.

19. A method in accordance with claim 16 wherein said ruminant animal is sheep.

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L9: Entry 84 of 90 File: USPT Oct 23, 1979

DOCUMENT-IDENTIFIER: US 4172127 A
TITLE: Treatment of ruminants

Abstract Text (1):
In a feedlot operation wherein ruminant animals, such as cattle or sheep, are fed ad libitum a high-energy ration or feed, lactic acidosis is greatly reduced or eliminated and weight gain and feed conversion are increased by administering to the animal the microorganism Peptococcus asaccharolyticus upon introduction of the animal to the feedlot. The microorganism is conveniently administered to the animal, either by direct injection or introduction into the rumen via a needle or stomach tube or in admixture with the feed or ration. The microorganism is also useful in the treatment of cattle (calves) and sheep ill with lactic acidosis.

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L9: Entry 87 of 90 File: USPT Dec 6, 1977

DOCUMENT-IDENTIFIER: US 4061732 A
TITLE: Control of lactic acidosis in ruminants

Abstract Text (1):
The nutritional disease, lactic acidosis, is successfully prevented by orally administering to the animal an effective amount of a sulfur-containing peptide antibiotic. In particular thiopeptin and thiostrepton are particularly effective sulfur-containing peptide antibiotics useful against lactic acidosis.

CLAIMS:

1. A method for the prevention of lactic acidosis in ruminants and for shortening the period of adaptation of said ruminants to a high energy feed from a low energy roughage feed wherein said low energy roughage feed has an energy content of less than 110 megacalories per 100 kg. of feed and said high energy feed has an energy content of 110 or more megacalories per 100 kg. of feed, which comprises administering to said ruminant said high energy feed and an effective amount of a sulfur-containing peptide antibiotic with a molecular weight in excess of 900.

5. A method for the prevention of lactic acidosis in ruminants and for shortening the period of adaptation of said ruminants to a high energy feed following a period of starvation which comprises administering to a ruminant which has been deprived of feed for a period in excess of 6 hours, a high energy medicated feed comprising a feed ration having an energy content of 110 or more megacalories per 100 kg. of feed and an effective amount of a sulfur-containing peptide antibiotic with a molecular weight in excess of 900.

9. A method for the prevention of lactic acidosis in ruminants and for shortening the period of adaptation of said ruminants to a higher energy feed from a lower energy feed wherein said lower energy feed has an energy content of at least 110 megacalories per 100 kg. of feed and said higher energy feed has an energy content of 10 or more megacalories per 100 kg. higher than said lower energy feed which comprises including in said higher energy feed an effective amount of a sulfur-containing peptide antibiotic having a molecular weight in excess of 900.

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L10: Entry 16 of 45 File: USPT Jan 14, 2003

DOCUMENT-IDENTIFIER: US 6506389 B2
TITLE: ADHERENCE FACTORS OF NON PATHOGENIC MICROORGANISMS AND APPLICATIONS THEREOF FOR SCREENING MICROORGANISMS FOR SPECIFIC PROBIOTIC PROPERTIES; NOVEL PHARMACEUTICAL COMPOSITIONS AND FOOD ADDITIVES COMPRISING SUCH MICROORGANISMS AND ADHERENCE FACTORS

Brief Summary Text (11):
The mucosa form the porte d'entree of numerous pathogenic bacteria, for example of Gram negative bacteria of the genera Escherichia, Campylobacter, Haemophilus, Shigella, Vibrio, Pasteurella, Yersinia, Salmonella, Gram positive bacteria like Mycobacterium, Listeria, Clostridium, Staphylococcus and viruses like rotavirus, poliovirus, measles and many other microorganisms well known to a person skilled in the art of microbial infections.

Brief Summary Text (16):
It is common knowledge that the normal human gastro-intestinal tract is colonized by a variety of non pathogenic microorganisms including bacteria of the genera Lactobacillus, Streptococcus, Enterococcus, Bifidobacterium, Clostridium, Bacteroides, and others. These microorganisms form part of the indigenous microflora of the human being. As such considerable interest has been directed to elucidating the mechanisms of adherence and the role of adhesion in gastro-intestinal colonisation. However the mechanisms of adhesion of LAB, a well examined group of non pathogenic bacteria present in gut microflora of humans and animals are in general more complex than those of the gastro-intestinal pathogens (Hasty et al. Infect. Immun. 60:2147-2152 1992).

Brief Summary Text (18):
Lactic acid bacteria, particularly Lactobacillus and Enterococcus, are examples of non pathogenic Gram-positive bacteria that play a key role in the establishment and maintenance of the microflora of the gastro-intestinal tract of man and animals. Lactobacillus species have been isolated from various regions of the human gastro-intestinal tract (Molin et al, J. Appl. Bacteriol. 74, 314-323 1993).

Brief Summary Text (31):
Some strains of Lactobacillus and Bifidobacterium strains, reportedly, have probiotic properties. The beneficial effects have been attributed to the lowering of the pH, a condition which reduces the proliferation of Gram-negative pathogens like Escherichia coli. In addition, many species of lactic acid bacteria produce oligopeptides with antimicrobial properties, called bacteriocines. These compounds are bacteriostatic or bacteriocidal for Gram-positive bacterial pathogens, like Clostridium, Listeria etc.

Brief Summary Text (39):
i) A more rapid and directed screening of bacteria for bacteria with probiotic properties and/or immunomodulating properties is now possible. The present invention allows rapidly screening bacteria for the

capacity to interfere with the adherence of pathogens to mucosal receptors. In particular, the present invention provides a method to screen microorganisms for the presence of an adherence factor that enhances the specific adhesion of non-pathogenic Gram positive bacteria, more in particular the adhesion of lactobacilli, to bacterial receptor(s) of the mucosa of the gastro-intestinal tract, the urogenital tract, the respiratory tract and the oral/nasal cavity of humans and animals. Preferably the microorganisms to be screened will be microorganisms that are non pathogenic in humans and animals. Such microorganisms will preferably be indigenous to humans and/or animals, thus already being able to withstand the environment in which they are to be applied and also obviously not being toxic to the particular species from which they are derived. Examples of suitable non pathogenic microorganisms include bacteria of the genera Lactobacillus, Streptococcus, Enterococcus, Bifidobacterium, Clostridium and Bacteroides.

Brief Summary Text (44):
ii) By applying the protein or polypeptide capable of specifically binding mucosa to a human or animal or by applying a microorganism capable of expressing such a protein or polypeptide or a culture of such a microorganism to a human or an animal it now becomes possible to interfere with the adhesion of pathogenic microorganisms to mucosa or mucin. In particular it becomes possible to prevent or reduce adhesion by pathogenic microorganisms to mucosa of the urogenital tract, gastro-intestinal tract, respiratory tract and/or oral/nasal cavity of humans and animals. Particularly interesting is that the invention offers a method to efficiently and specifically interfere with the adhesion of certain classes of pathogens to bacterial receptors of the mucosa and to screen for microorganisms capable of interfering with adhesion of certain classes of pathogens. Pathogens that may now be combatted comprise both Gram positive and Gram negative microorganisms in particular those that specifically bind mucosa receptors. Examples of pathogens to be combatted comprise strains of the genera Escherichia, Campylobacter, Haemophilus, Shigella, Vibrio, Pasteurella, Yersinia, Salmonella, Mycobacterium, Listeria, Clostridium, Staphylococcus and viruses like rotavirus, poliovirus and measles.

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L9: Entry 51 of 90 File: USPT Jun 25, 1996

DOCUMENT-IDENTIFIER: US 5529793 A
TITLE: Compositions for improving the utilization of feedstuffs by ruminants

Abstract Text (1):
A composition of a mixture of a lactic acid producing bacteria culture and a lactate utilizing bacteria culture admixed with a dry formulation or an animal feedlot diet for improving the utilization of feedstuffs by a ruminant. The composition may be used on a continual basis to increase meat or milk production, or used during the transition from a roughage diet to a feedlot diet to prevent or minimize acidosis. The preferred embodiment utilizes Lactobacillus acidaphilus as its lactic acid producing bacteria culture and Propionibacterium P-5 as its lactate utilizing bacteria culture. The composition is in a dry powder form for storage at ambient temperatures for long durations.

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L10: Entry 12 of 45 File: USPT Feb 25, 2003

DOCUMENT-IDENTIFIER: US 6524574 B1
TITLE: Probiotic mixture intended for monogastric animals to control intestinal flora populations

Abstract Text (1):
A mixture of probiotics effective to reduce the contamination of enteric bacteria in humans and other monogastric animals. The mixture of probiotics includes a lactic acid-producing bacteria and a yeast, and may advantageously be supplemented with a source of nutrients, such as lactose, in certain applications. In a preferred embodiment, the bacterial component is at least one strain of Enterococci, the yeast is at least one strain of Saccharomyces, and a high lactose whey.

Brief Summary Text (7):
Spring, March 1997; (Animal Talk), opines that the main regulatory mechanisms used by natural gut inhibitants as Lactobacilli and Enterococci is to keep pathogenic bacteria from colonizing the digestive tract. Mechanisms discussed include competition for nutrients, growth factors, intestinal receptor sites, and stimulation of epithelial cell turnover. Creation of a restrictive environment includes lower pH, VFA and lactic acid production or induction of an immunologic process or antimicrobial substances.

Brief Summary Text (19):
Saavedra, et al., 1994 (Lancet 334:1046-1049) showed that feeding of a Bifidobacteria and Enterococci species to hospitalized human infants for prevention of diarrhea and the shedding of rotavirus.

Brief Summary Text (20):
Ozawa, et al. 1983 (Applied and Environmental Microbiology 45: 151) reported that the administration of an Enterococcus species to calves and piglets promoted colonization of beneficial bacteria and decreased the occurrence of detrimental bacteria, such as Salmonella, in the intestine.

Brief Summary Text (22):
From the Bergey's Manual of Systematic Bacteriology 1984. it is observed that within the genera Campylobacter, Pseudomonas and most Vibrio and Clostridia species do not utilize lactose as a carbon source for growth. Also, Enterobacteriaceae, in general, are poor or nonutilizers of lactose. Whereas, the Enterococcus species used in the invention readily utilize lactose.

Brief Summary Text (23):
The importance of mannose-sensitive adhesions of gram-negative intestinal bacteria for intestinal colonization of these bacteria was investigated, as well as the presence of a mannose-specific adhesion in a gram-positive bacterial species, i.e., Lactobacilli and Enterococci, which belong to the indigenous intestinal microflora. Further, investigation was made into the ability of gram-positive, non-pathogenic Enterococci and Lactobacilli to associate with animals' intestines and mannose containing polysaccharides (mannose) found as a major cell wall component in species of Saccharomyces, and, in particular, its use in conjunction with the lactic

acid-producing metabolism of Enterococci and/or Lactobacilli to rid and/or prophylatically protect the intestines of monogastric animals and humans of potentially pathogenic bacteria.

Brief Summary Text (26):
The invention is a unique probiotic mixture that combines two viable lactic acid-producing Enterococcus strains and two viable Saccharomyces yeast strains that are preferably added to an active carrier that includes nutrients to assist in the growth and/or activity of the probiotics. The mixture is fed to monogastric animals to control the microflora population of the intestinal tract and to maintain a proper balance of naturally occurring beneficial microflora while competing with and helping to exclude deleterious strains of microflora such as bacterial pathogens, thus aiding the ability of the animal to maintain a normal, healthy intestinal environment and, in turn, utilize feeds better.

Brief Summary Text (27):
Ingesting this probiotic mixture by monogastric animals and humans will help the body protect itself from colonization of pathogenic microflora such as bacteria within the families Enterobacteriacae and Vibrionaceae, and the genera Campylobacter, Clostridia, Pseudomonas, or other organisms that can cause intestinal distress.

Drawing Description Text (4):
FIGS. 3 and 4 are a graphical representation of data regarding piglets from gilts with chronic Clostridia treated with the probiotic mixture of the present invention.

Drawing Description Text (6):
FIG. 6 is a graphical representation of the production of lactic acid by the two different Enterococci bacteria strains used in the preferred embodiment of the present invention in the presence of lactose, glucose, and maltose.

Detailed Description Text (3):
Microflora such as the Enterococci of our invention effectively colonize the animal's intestines. Pathogenic microflora such as Escherichia, Shigella, Enterobacter, Kleibsiella, Pseudomonas, Salmonella and Vibrio, attach to mannose receptor compounds in the cell walls of intestinal villi. They use mannose sugars as recognition compounds for attachment onto the mucosal cells. The aforementioned pathogenic microbes prefer a relatively low acid (neutral pH) environment while the microbes of our invention prefer a more acidic environment.

Detailed Description Text (4):
The lactic acid-producing Enterococci of our invention readily use lactose as a source of food for growth and reproduction. The aforementioned deleterious microbes do not utilize lactose as well as the microbes in our invention thus resulting in a competitive starvation for this food source. Accordingly, a source of lactose or other carbohydrate or nutrient may be advantageously included in the probiotic mixture.

Detailed Description Text (5):
Once the Enterococcus organisms of our invention inhabit the animal's intestine, they begin to metabolize, reproduce and produce lactic acid which is excreted into the surrounding environment. The lactic acid lowers the pH in the area causing the neighboring harmful enteric organisms to detach from their locations on the intestinal villi due to the acidic environment.

Detailed Description Text (6):
Subsequent to the detachment from the villi attachment sites, the enteric microbes encounter the yeast strains which, like the intestinal villi, contain mannose receptor compounds in their cell walls. The aforementioned deleterious microbes use these mannose sugars as recognition compounds for attachment onto the intestinal villi. Even if the pathogenic bacteria prefer the receptor sites on the intestine over those of the

yeast, the production of a poor environment for these microflora by the Enterococci via acid produced leads to the detachment of the pathogenic bacteria and their subsequent adherence to the yeast strains is observed.

Detailed Description Text (8):
The probiotic contains a combination of viable lactic acid-producing bacteria (including the genera Enterococcus and Lactobacillus) and a viable yeast (of the Saccharomyces genera, which have mannose-containing polysaccharides and glucans associated with their cell walls). A carbohydrate source (including whey, milk products, and lactose) which is poorly utilized by many pathogenically significant species of the families Enterobacteriaceae and Vibrionaceae; and the genera Pseudomonas, Campylobacter, and Clostridia may be advantageously included with the bacteria and yeast. The lactic acid-producing bacteria and yeast strains of the probiotic mixture grow best under mesophillic temperatures (25.degree. C. to 40.degree. C.) and slightly acidic conditions (pH 6.8 to 5.0), even though growth can be observed within the range of pH=4.0 to 8.0 with the lactic acid-producing bacteria and within the range of pH=3.5 to 8.0 with the yeasts.

Detailed Description Text (9):
The probiotic mixture contains between about 20% and about 80% of the Saccharomyces yeast CFUs and between about 20% and about 80% of the Enterococci bacteria CFUs, and preferably between about 30% and about 50% of the Saccharomyces yeast CFUs and between about 50% and about 70% of the Enterococci bacteria CFUs, with the preferred embodiment comprising 40% Saccharomyces and 60% Enterococci. In particular, the commercial products of the probiotic mixture of the present invention contained approximately equal quantities of the two Enterococcus strains, Enterococcus faecium NCIB Accession No. 11181 (commercially available from Medipharm, USA, 10215 Dennis Drive, Des Moines, Iowa, 50322), and Enterococcus faecium strain WN commercially available from Loders Croklaan, Inc., 24708 W. Durkee Rd., Channahon, Ill. 60410 and approximately equal quantities of the two Saccharomyces strains, Saccharomyces cerevisiae strains identified with the European Registry accession numbers Sc 47 (commercially available from SAF Agri, 400 S. Fourth St. # 310, Minneapolis, Minn. 55415) and I-1079 (commercially available from Lallemand Biochem International, 6120 West Douglas Ave. Milwaukee, Wis. 53218). The commercial products incorporating the probiotic mixture of the present invention are administered to provide at least 10.sup.9 CFUs of the Saccharomyces yeast and lactic acid-producing Enterococci combination is ingested per head per day and no adverse effects have been observed at administration rates up to 4.times.10.sup.9 per head per day. Below about 2.5.times.10.sup.8 CFUs per animal per day the results become variable and full efficacy may not be observed. The lactose source used in the commercial products is high-lactose whey that is available from a variety of commercial sources. In the experiments set out in this specification, the specific high-lactose whey was specified to contain between 80.0% and 88.0% lactose, between 3.0% and 5.0% crude protein, a maximum of 8.5% ash and a maximum of 5% moisture. A commercial product is constituted with the strains of Saccharomyces and Enterococci as set out above added to 1 lb. of the high-lactose whey in amounts so that there is a total of 150.times.10.sup.9 CFUs of the yeast and bacteria in 1 lb. of the commercial product.

Detailed Description Text (22):
A herd of pigs that had a history of chronic infection of Clostridia was divided into four groups to observe the effects of treatment with the probiotic mixture before and after farrowing. In the data of Table 5, Group 1 is the control; Group 2 were administered the probiotic mixture between days 7 and 14 following farrowing; and Groups 3 and 4 were administered the probiotic mixture for three weeks before farrowing.

Detailed Description Text (23):
The data show the average litter weights of gilts fed the probiotic mixture was one pound heavier at 14 days compared to the pigs of gilts fed the control diet, and a greater percentage of the piglets born to gilts on the probiotic-treated diet were heavier at 8 lbs. at 14 days. Also, the number of piglets that required treatment

for Clostridia infections of the treated gilts was lower than piglets of the control gilts. A graphical representation of this summary data is shown in FIGS. 3 and 4.

Detailed Description Text (29):
An experiment was conducted to quantitate the production of lactic acid by the two strains of Enterococci used in the probiotic mixture of the preferred embodiment of the invention. The bacteria were grown in a soy protein/sugar substrate wherein the three sugars lactose, glucose and maltose were used. The substrates were made up as shown in Table 8.

Detailed Description Text (32):
An experiment was conducted to observe the use of lactose as a carbohydrate source for lactic acid production and growth of the probiotic strains of Enterococcus and its utilization or non-utilization by the other microbes tested. The microbes were grown on the media set out in Table 9.

Detailed Description Text (37):
For other species, commercial media were used: Clostridium species--Reinforced Clostridial Medium (Difco); Campylobacter species--Fluid Thioglycollate Medium (Difco); Pseudomonas species--Trypticase Soy Broth (BBL).

Detailed Description Text (40):
An experiment was conducted to observe the lactic acid and acetic acid production over time of a strain of E. coli, the Enterococci species of the probiotic mixture, the Saccharomyces species of the probiotic mixture alone and in combination with the E. coli strain. In the experiment, 10.sup.7 CFUs of each microbe were added to 250 mL of the media culture set out in Table 14.

Detailed Description Text (42):
These results suggest that the ability of the Enterococci strains of the probiotic mixture to produce lactic acid are not hindered nor greatly influenced by the E. coli isolate. Also, ability of the E. coli isolate to metabolize appears to be hindered when co-incubated with the Enterococci as seen in the acetic acid results at 6 and 8 hrs and the marked depression of acetic acid formation relative to E. coli only and to E. coli +Saccharomyces. At 6 hrs and beyond, the lactic acid concentration was greater than 8 mM. Further, the Saccharomyces strains do not seem to hinder the ability of the E. coli isolate to metabolize and produce acids.

Detailed Description Paragraph Table (5):
TABLE 5 Data on effects of probiotic mixture on farrowing gilts with chronic Clostridia infections Avg. No. Pigs No. of Pig wt Treated No. of No. of No. of Pigs at 14 No. Total for Clostridia Pigs Pigs "No days Litters Pigs Clostridia deaths >8 lbs. <8 lbs. value" (lbs.) Group 1 18 160 108 7 146 4 3 10.8 Group 2 19 158 60 2 154 2 0 12.0 Group 3 27 216 0 0 216 0 0 11.8 Group 4 22 120 0 0 118 0 2 12.0

Detailed Description Paragraph Table (6):
TABLE 6 Data on effects of probiotic on pigs born to farrowing gilts with chronic Clostridia infections % Pigs Treated for Clostridia % Pigs > 8 lbs. Group 1 67.5 91.3 Group 2 38.0 97.5 Group 3 0.0 100.0 Group 4 0.0 98.3

Detailed Description Paragraph Table (7):
TABLE 7A Total CFUs Added and Collected from Small Intestine Sections Total Enterics Yeasts Enterococci CFU Added Time = 0 Total CFUs Added to 6-inch Section of Small Intestine Control, Rep #1 0 0 0 0 Control, Rep #2 0 0 0 0 Probiotic, Rep #1 0 2.33 .times. 10.sup.3 4.8 .times. 10.sup.4 5.03 .times. 10.sup.4 Probiotic, Rep #2 0 2.25 .times. 10.sup.3 5.10 .times. 10.sup.4 5.33 .times. 10.sup.4 Time = 4 Total CFUs Collected from 6-inch Section of Small Intestine Control, Rep #1 3.40 .times. 10.sup.5 0 2.83 .times. 10.sup.7 2.86 .times. 10.sup.7 Control, Rep #2 4.40 .times. 10.sup.5 0 2.14 .times. 10.sup.7 2.18 .times. 10.sup.7 Probiotic, Rep #1

8.50 .times. 10.sup.5 2.93 .times. 10.sup.3 7.41 .times. 10.sup.7 7.50 .times. 10.sup.7 Probiotic, Rep #2 1.20 .times. 10.sup.6 2.14 .times. 10.sup.3 8.56 .times. 10.sup.7 8.68 .times. 10.sup.7

Detailed Description Paragraph Table (11):
TABLE 10 Lactic Acid Production of Strains of Various Microbes MM lactic acid ATCC # Microbial ID (18 hrs at 37.degree. C.) Probiotic Enterococcus strain 13.3 #1 Probiotic Enterococcus strain 15.6 #2 25931 Shigella sonnei 2.1 11835 Shigella dyseneriae 0.sup.1 23564 Salmonella typhimurium 0.sup.1 14028 Salmonella typhimurium 0.sup.1 43888 Escherichia coli 0157:H7 4.4 10145 Pseudomonas aeruguinosa 0.sup.1 29428 Campylobacter jejuni 0.sup.1 9689 Clostridia difficile 0.sup.1 14034 Vibrio cholerae 0.sup.1 .sup.1 Detection limit is 0.1 mM, values less than 0.1 mM are given as 0.

Detailed Description Paragraph Table (12):
TABLE 11 Bacterial Strains ATCC # Microbe Tested 25931 Shigella sonnei 23564 Salmonella typhimurium 14028 Salmonella typhimurium 43888 Escherichia coli 0157:H7 10145 Pseudomonas aeruguinosa 29428 Campylobacter jejuni 9689 Clostridia difficile

Detailed Description Paragraph Table (16):
TABLE 15 Lactic Acid and Acetic Acid Production Over Time mM lactic acid Culture ID 0 hr 2 hrs 4 hrs 6 hrs 8 hrs E. coli ATCC #43888 (only) 0.0.sup.1 0.3 0.8 1.4 2.6 Probiotic Enterococci mixture (only) 0.0.sup.1 0.8 4.2 8.1 13.9 Probiotic Saccharomyces mixture 0.0.sup.1 0.0.sup.1 0.0.sup.1 0.0.sup.1 0.0.sup.1 (only) E. coli + Enterococci 0.0.sup.1 0.7 4.3 8.4 14.2 E. coli + Saccharomyces 0.0.sup.1 0.3 0.8 1.4 2.5 E. coli ATCC #43888 (only) 0.0.sup.1 0.6 1.0 2.4 3.5 Probiotic Enterococci mixture (only) 0.0.sup.1 0.0.sup.1 0.0.sup.1 0.0.sup.1 0.0.sup.1 Probiotic Saccharomyces mixture 0.0.sup.1 0.0.sup.1 0.0.sup.1 0.0.sup.1 0.0.sup.1 (only) E. coli + Enterococci 0.0.sup.1 0.6 1.1 1.8 2.7 E. coli + Saccharomyces 0.0.sup.1 0.7 1.1 2.4 3.6 .sup.1 Detection limit is 0.1 mM, values less than 0.1 mM are given as 0.

CLAIMS:

1. A probiotic product comprising: (a) one or more viable lactic acid-producing bacteria strains within the genus of Enterococcus; (b) one or more viable yeast strains within the genus of Saccharomyces; and (c) one or more carbohydrate sources capable of being used by said one or more bacteria strains as a food source for growth,

wherein said probiotic product is suitable for oral administration to humans or monogastric animals and controls enteric bacteria populations in the intestines of said humans or monogastric animals upon administration and wherein between 30% and 50% of colony forming units (CFUs) of said probiotic product are Saccharomyces yeast CFUs, and between 50% and 70% CFUs of said probiotic product are Enterococcus bacteria CFUs.

2. The probiotic product as defined in claim 1, wherein said one or more carbohydrate sources are one or more sugars selected from the group consisting of glucose, fructose, lactose, maltose, and sucrose.

3. The probiotic product according to claim 1, wherein said one or more yeast strains are selected from the group consisting of Saccharomyces cerevisiae strains Sc 47 (NCYC #47) and I-1079 (CNCM #I-1079).

4. A food supplement comprising the probiotic product of claim 1.

5. The probiotic product according to claim 1, wherein said one or more carbohydrate sources comprises whey.

6. The probiotic product according to claim 5, wherein said whey comprises between 80.0% and 88.0% lactose.

7. The probiotic product according to claim 1, wherein said one or more carbohydrate sources comprises a milk product.

8. The probiotic product according to claim 1, wherein said one or more carbohydrate sources comprises lactose.

9. The probiotic product according to claim 8, comprising two Saccharomyces yeast strains and two Enterococcus bacteria strains.

10. The probiotic product according to claim 1, wherein said one or more carbohydrate sources comprises fructose.

11. The probiotic product according to claim 10, comprising two Saccharomyces yeast strains and two Enterococcus bacteria strains.

12. The probiotic product according to claim 1, comprising Enterococcus faecium strain 11181 (NCIMB #11181).

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L10: Entry 5 of 45 File: USPT Apr 8, 2003

DOCUMENT-IDENTIFIER: US 6544510 B2
TITLE: Bacterial strain, processed plant extracts, compositions containing same, processes for their preparation and their therapeutic and industrial applications

Abstract Text (1):
The present invention discloses: (i) a non-pathogenic probiotic microorganism and its probiotic/therapeutic uses; (ii) a formulation comprising an aqueous solution of a volatile fraction (VF) prepared from the extract of at least one plant derived material and its therapeutic uses; (iii) a process of manufacturing the formulation from the plant derived material; (iv) a probiotic composition comprising the non-pathogenic probiotic microorganism of the invention and/or other probiotic microorganism(s) and the formulation of the invention, and its probiotic/therapeutic uses; (v) a composition for industrial applications comprising the formulation of the invention and microorganism(s) of industrial applicability; and (vi) industrial processes and apparatuses in which the latter composition is used.

Brief Summary Text (18):
The probiotic composition of the present invention may be identified for preventing or treating gastro-enteric infections or disorders, maintaining or reinstating normal gastro-intestinal microflora, preventing or treating diarrhea, preventing or treating gastro-enteric infection caused by an enteric pathogen, such as a Gram negative bacterium or Gram positive bacterium, preventing or treating gastro-enteric Salmonella infection, preventing or treating infectious diarrhea, caused by, for example C. difficile, Salmonella, particularly S. Shigella, Campylobacter, E. coli, Proteus, Pseudomonas or Clostridium, chronic diarrhea or diarrhea resulting from antibiotic therapy, radiotherapy or chemotherapy, and/or for normalizing the physiological activity of the gastrointestinal tract.

Detailed Description Text (20):
The infectious diarrhea may be caused by numerous factors, for example, by a microorganism selected from C. difficile, Salmonella, particularly S. Shigella, Campylobacter, E. coli, Proteus, Pseudomonas, Clostridium, enteric Staphylococcus. These are but few of many infecting agents.

Other Reference Publication (41):
A Strain of Enterococcus faecium (18C23) Inhibits Adhesion of Enterotoxigenic Escherichia coli K88 to Porcine Small Intestine Mucus, Jin et al., Applied and Environmental Microbiology, Oct. 2000, vol. 66, No. 10, pp. 4200-4204.

Other Reference Publication (43):
Expression of Clostridium thermocellum Endoglucanase Gene in Lactobacillus gasseri and Lactobacillus johnsonii and Characterization of the Genetically Modified Probiotic Lactobacilli, Soon-Chuo, et al., Current

Microbiology, vol. 40, 2000, pp. 257-263.

Other Reference Publication (51):
The Effect of Lactobacillus salivarius Administration on Coliforms and Enterococci in the Crop and Caeca of Chicken Broilers, Rada, et al., Vet. Med. Czech, 40, 1995, 10, pp. 311-315.

CLAIMS:

1. A probiotic composition comprising: (a) a therapeutically effective amount of at least one viable probiotic microorganism having a biological or therapeutic activity in the gastrointestinal tract; and (b) at least one volatile fraction (VF) of a plant extract, said plant extract being obtained by water extraction and said volatile fraction being prepared by steam distillation of said plant extract under a pressure lower than atmospheric pressure and at a bath temperature not exceeding 38.degree. C.

2. The probiotic composition of claim 1, further comprising at least one flavouring agent.

3. The probiotic composition of claim 1, wherein said probiotic microorganism is E. coli.

4. The probiotic composition of claim 1, wherein said probiotic microorganism is the E. coli strain BU-230-98, ATCC Deposit No. 202226.

5. The probiotic composition of claim 1, identified for preventing or treating gastro-enteric infections or disorders.

6. The probiotic composition of claim 1, identified for maintaining or reinstating balanced gastrointestinal microflora.

7. The probiotic composition of claim 1, identified for preventing or treating diarrhea.

8. The probiotic composition of claim 1, identified for the prevention or treatment of gastro-enteric infection caused by an enteric pathogen.

9. The probiotic composition of claim 8, wherein said pathogen is a Gram negative bacterium or Gram positive bacterium.

10. The probiotic composition of claim 8, for treating dyspeptic symptoms.

11. The probiotic composition of claim 8, for stimulating the immune response in a patient suffering from an immune disorder.

12. The probiotic composition of claim 11, wherein said immune disorder results from immune-response suppression therapy.

13. The probiotic composition of claim 1, comprising distilled water and volatile fractions of beet and dill.

14. The probiotic composition of claim 1, identified for preventing or treating gastro-enteric Salmonella infection.

15. The probiotic composition of claim 1, identified for preventing or treating infectious diarrhea, chronic diarrhea or diarrhea resulting from antibiotic therapy, radiotherapy or chemotherapy.

16. The probiotic composition of claim 1, identified for treating infectious diarrhea, comprising distilled water and volatile fractions of beet and dill.

17. The probiotic composition of claim 16, wherein said infectious diarrhea is caused by C. difficile, Salmonella, particularly S. Shigella, Campylobacter, E. coli, Proteus, Pseudomonas or Clostridium.

18. The probiotic composition of claim 1, identified for balancing the physiological activity of the gastrointestinal tract.

19. The probiotic composition of claim 1, comprising distilled water and wherein said volatile fractions are of alfalfa, soy beans, beet, dill, mint, parsley and cabbage and said probiotic microorganism is E. coli strain BU-230-98, ATTC Deposit No. 202226.

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L10: Entry 1 of 45 File: USPT Sep 2, 2003

US-PAT-NO: 6613549
DOCUMENT-IDENTIFIER: US 6613549 B2

TITLE: Probiotic therapy for newborns

DATE-ISSUED: September 2, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Reid; Gregor	London			CA
Bruce; Andrew W.	Toronto			CA
Han; Victor	London			CA

US-CL-CURRENT: 424/93.44, 424/93.46, 424/93.51, 435/252.1, 435/252.9, 435/253.4, 435/254.21

CLAIMS:

What is claimed is:

1. A method of colonizing gastrointestinal flora in newborns comprising administering a therapeutically effective amount of at least one probiotic organism selected from the group consisting Lactobacillus rhamnosus GR-1 and Lactobacillus fermentum RC-14 and a pharmaceutically acceptable carrier.

2. The method of claim 1 further comprising the administration of a therapeutically effective amount of at least one second probiotic organism.

3. The method of claim 2 wherein said second probiotic organism is a Bifidobacterium.

4. The method of claim 2 wherein said second probiotic organism is selected from the group consisting of B. bifidum, B. adolescentis, B. infantis, B. pseudolongum, B. angulatum, B. catenulatum and B. longum.

5. A method of enhancing protective gastrointestinal flora in newborns comprising administering a therapeutically effective amount of at least one probiotic organism selected from the group consisting Lactobacillus rhamnosus GR-1 and Lactobacillus fermentum RC-14 and a pharmaceutically acceptable carrier.

L9: Entry 50 of 90 File: USPT Jul 9, 1996

DOCUMENT-IDENTIFIER: US 5534271 A
TITLE: Process for improving the utilization of feedstuffs by ruminants

Abstract Text (1):
A process for improving the utilization of feedstuffs by a ruminant, the process comprising the steps of mixing a lactic acid producing bacteria culture and a lactate utilizing bacteria culture, admixing these cultures with a dry formulation or an animal feedlot diet into a composition, and administering this composition orally to ruminants. The process may be used on a continual basis to increase meat or milk production, or used during the transition from a roughage diet to a feedlot diet to prevent or minimize acidosis. The preferred embodiment utilizes Lactobacillus acidophilus as its lactic acid producing bacteria culture and Propionibacterium P-5 as its lactate utilizing bacteria culture. The composition of the process is in a dry powder form for storage at ambient temperatures for long durations.

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L4: Entry 1 of 1 File: USPT Mar 22, 1988

DOCUMENT-IDENTIFIER: US 4732854 A
TITLE: Method of producing dextranase

Abstract Text (1):
A mutant species of Lipomyces starkeyi ATCC No. 12659 capable of hyperproducing dextranase and an improved method of culturing to achieve such at low pH to provide biologically contaminant free supernatant liquid containing dextranase. The further improved method of culturing the mutant species on a non-dextran, assimilable carbon source with optimal dextran induction is also disclosed.

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L9: Entry 56 of 90 File: USPT Jan 10, 1995

US-PAT-NO: 5380525
DOCUMENT-IDENTIFIER: US 5380525 A

TITLE: Ruminal bacterium for preventing acute lactic acidosis

DATE-ISSUED: January 10, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Leedle; Jane A. Z.	Manhattan	KS		
Greening; Richard C.	Richland	MI		
Smolenski; Walter J.	Richland	MI		

US-CL-CURRENT: 424/93.4; 426/2, 435/140, 435/141

CLAIMS:

We claim:

1. A biologically pure bacterial culture of Megasphaera elsdenii, Agricultural Research Service Patent Culture Collection Accession Number NRRL-18624.

2. A composition for facilitating the adaptation of ruminants from a roughage or normal pasture rations to a high energy starch ration, consisting essentially of the bacterial culture of claim 1.

3. A method of facilitating the adaptation of ruminants from a roughage or normal pasture ration to a high energy ration comprising administering to said ruminant an effective amount of a bacterial culture according to claim 1 during said adaptation.

4. A method of preventing our treating acute lactic acidosis in ruminant animals comprising administering to said ruminant an amount of a bacterial culture according to claim 1 effective to prevent such acidosis.

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L10: Entry 22 of 45 File: USPT Oct 22, 2002

DOCUMENT-IDENTIFIER: US 6468964 B1
TITLE: Control of acidic gut syndrome

Brief Summary Text (32):
More typically, the probiotic preparations may include bacteria selected from the group consisting of: Succinonionas, Butyrivibrio, Bacteroides and Succinivibrio. These bacteria can be used individually or in combination.

Brief Summary Text (35):
Even more typically, the probiotic preparations may include bacteria selected from the group consisting of: Megasphera, Veillenolla, Selenomonas, Propionibacterium, Anaerovibrio and Peptococcus. These bacteria can be used individually or in combination.

Brief Summary Text (70):
Typically, bacteria against which the human or animal is immunised include: Aerococcus, Alloiococcis, Carnobacterium, Enterococcus, Lactobacillus, Lactococcus, Leuconostoc, Pediococcu, Streptococcu and Tetragenacoccus among others.

CLAIMS:

2. The method of claim 1, wherein said active agent is selected from the group consisting of: antibiotics, enzyme preparations, clay preparations, compounds which slow the rate at which gut contents passes through the digestive tract, and probiotic preparations.

12. The method of claim 1, wherein said active agent is a probiotic preparation which reduces lactic acid accumulation by formation of alternative end products of fermentation; production of volatile fatty acids rather than lactic acid during carbohydrate fermentation, through increased utilization of lactic acid, or through the conversion of lactic acid to volatile fatty acids which can be absorbed from the gut, thereby reducing acidity in the gut.

13. The method of claim 12, wherein said probiotic preparation comprises bacteria.

14. The method of claim 13, wherein said bacteria is selected from the group consisting of: Succinomonas, Butyrivibrio, Bacteroides, Succinivibrio, Megasphera, Veillenolla, Selenomonas, Propionibacterium, Anaerovibrio and Peptococcus.

15. The method of claim 12, wherein said probiotic preparation comprises yeast and/or mycelial preparations

capable of utilizing lactic acid.